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ADDRESS ALL COMMUNICATIONS TO
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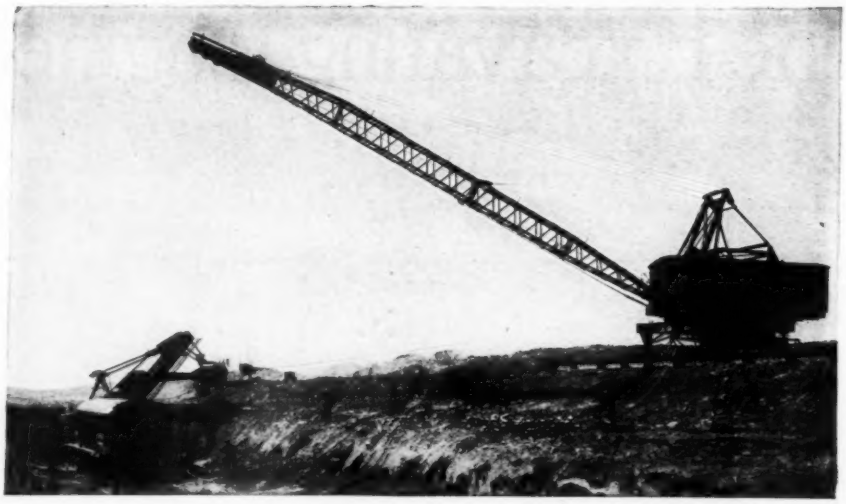

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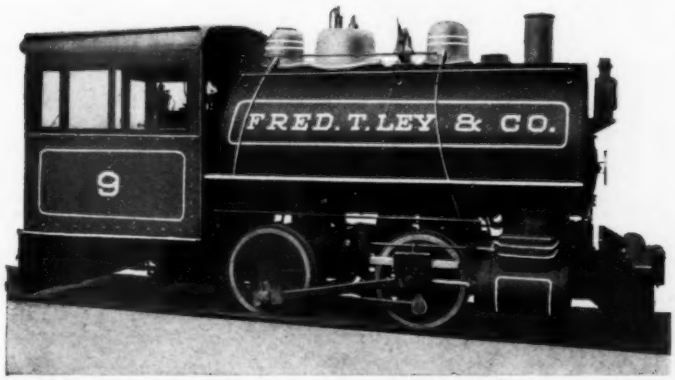

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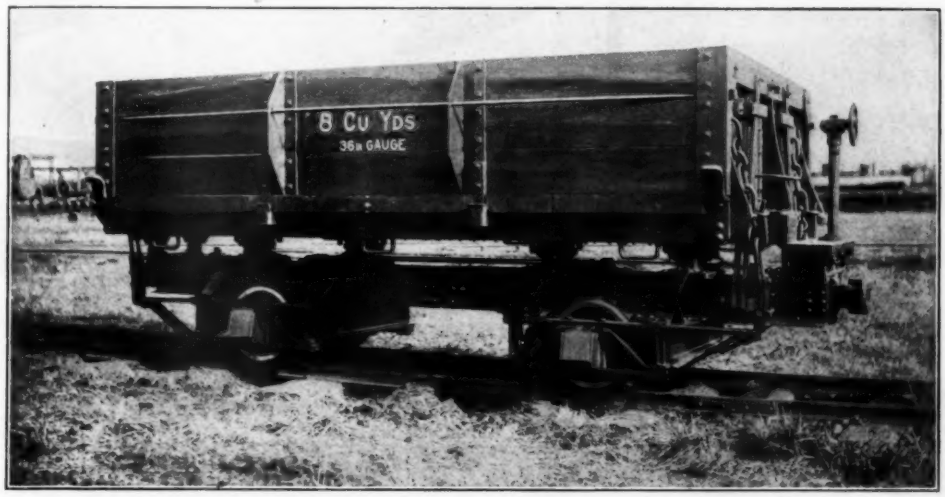

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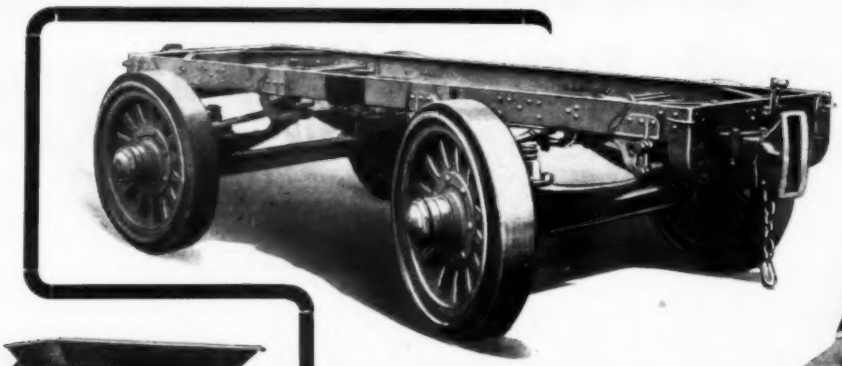

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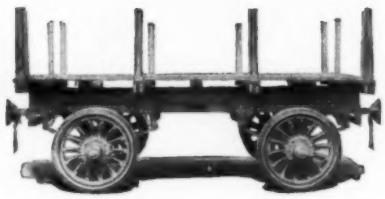

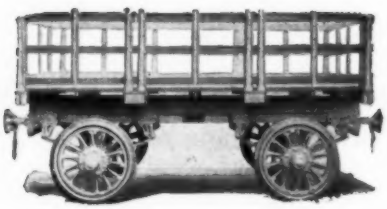

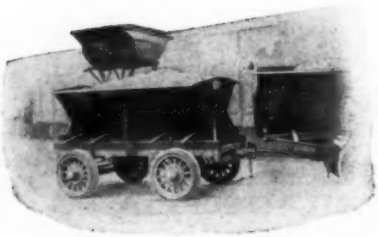

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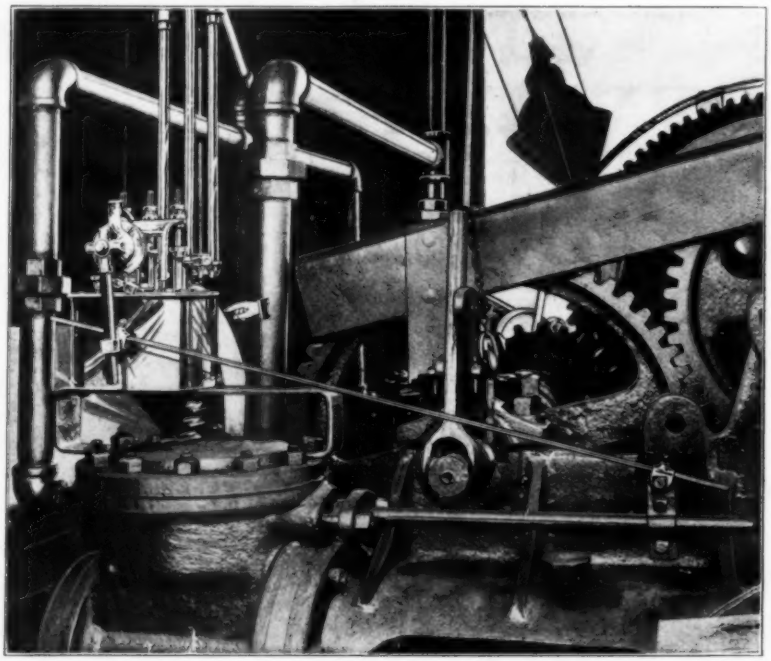

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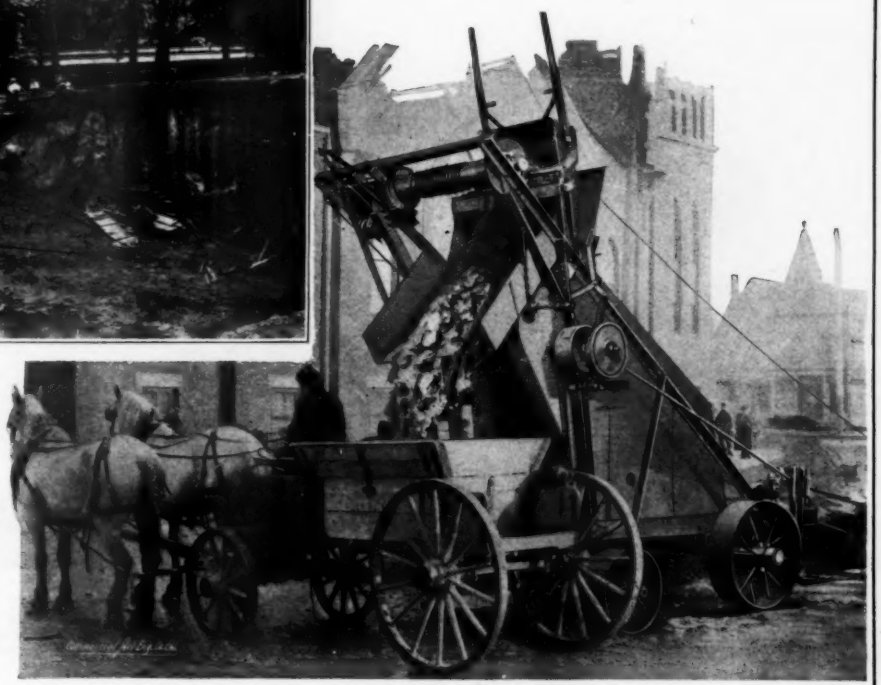

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One of the class-9½ Bucyrus electric draglines at work on the Pioneer Irrigation District. This photograph gives a very good idea of the character of the country.

Cleaning up and enlarging old drainage ditches on the Minidoka Project in Idaho. A class-9½ Bucyrus electrically operated dragline excavator at work. This machine was transferred to work on the Fargo Basin in October 1914, which it completed in March 1915. It is now being use on the Nampa and Meridan Irrigation District of the Boise Project.

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The Excavating Engineer

Vol. 12 APRIL, 1916 No. 7

Electric Dragline Work on the Boise Project, United States Reclamation Service, Idaho

A statement of remarkable records made by three caterpillar-mounted electric draglines with 50-foot booms and 1¼-yard buckets on the Pioneer Irrigation District and the Fargo Basin of the Boise Project.

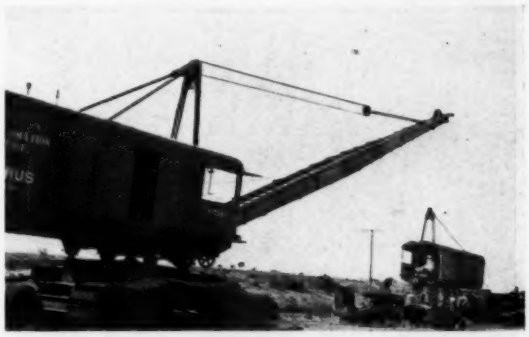
Pioneer Irrigation District; Its Contract with the U. S. R. S.

THE Pioneer Irrigation District is situated near Caldwell and Nampa, Idaho, in Canyon and Ada counties just southwest of Boise, and not far from the Oregon line. The tract, which lies in the valley of the Boise River is five miles wide by about ten miles long and comprises 34,000 acres of irrigable lands, the greater part of which has been under irrigation for the past twenty years.

In order to understand the conditions which subsequently caused the absorption of this district in the Boise Project for construction purposes, it is important to know the character of the soil. A heavy loam covers the surface. Under this is from seven to twelve feet of either clay or hardpan, beneath which are strata of sand and gravel or very coarse sand. The strata immediately underlying the surface loam, contain a large quantity of alkali which kills practically all profitable agricultural crops when this alkali is brought to the surface by ground waters. This is exactly what has happened. In 1910 ground water appeared in a few low areas caused by seepage from the canals within the district as well as from the higher lands outside. This affected area has continued to grow, the ground water carrying with it so much alkali that between 5000 and 7000 acres of land were injuriously affected.

In the spring of 1912, the Reclamation Service made a careful survey of the district and proposed the construction of a system of open-cut drainage ditches to carry off this ground water. This plan called for the construction of 50.4 miles of open drains varying in depth from 7 to 14 feet and in bottom width from 5 to 12 feet with side slopes of 1½ to 1. The system contemplated 2,000,000 cubic yards of excavation besides many culverts and bridges, an estimated expenditure of $350,000.00.

A contract was entered into between the Reclamation Service and the Pioneer Irrigation District, whereby the former undertook to construct the system, the cost to be paid by the district in ten annual installments, without interest. Actual construction was started in November 1913 and completed June 5th, 1915. The excavation was done by two Bucyrus electrically operated dragline excavators mounted on caterpillars. These draglines are described later.



Class-9½ Bucyrus electric dragline being assembled on the Minidoka Project near Heyburn, Idaho. It will be seen that one machine which has already been assembled, is acting as a crane to assist in the assembly of the second. These machines are now on the Boise Project.

The Supplemental Contract

As stated, the original estimate on the contract was $350,000, the total expenditure, however, was approximately $225,000 or $125,000 below this estimate. The funds thus saved are being spent

by the district on a supplemental contract for additional drainage work within the district.

Work was started on this contract by one dragline on August 15th, 1915 and by the other on September 9th. Work is still in progress.

Fargo Basin Work

A third Bucyrus electric dragline, similar to the two above mentioned, was used for digging drainage ditches on the Fargo Basin of the Boise Project

Why Electric Power Was Used

Conditions existing demanded the use of electricity to operate the machines. The water throughout the district is unfit for boiler use, due to the large amount of alkaline salts which it contains. Furthermore, for a large part of the time, the machines were working in swamps where it was at times impossible to drive a loaded wagon close enough to the machines to supply them with fuel. Power was secured from a 44,000-volt transmission

Digging the Purdum Slough Drain on the Pioneer Irrigation District. This photograph gives a good idea of the character of the material over which it was necessary to operate and also the amount of surface water which these drains will eventually take care of. The machine is an electrically operated Bucyrus class-9½ dragline excavator equipped with a 50-foot boom and a 1¼-yard bucket. It is mounted on caterpillars.

proper. This work was completed in April, 1915 and consisted of 275,644 cubic yards of excavation or about 5½ miles of open drains. Some of the records given later refer to this work. This work, because of softer material and less water, was comparatively easier than that on the Pioneer Irrigation District. Consequently, this must be kept in mind in reading the records of output.

line that passes through the district. This voltage was reduced to 4000 volts at a field sub-station, from which it was delivered to sub-stations at the excavators where the current was again reduced to 440 volts.

Power was purchased for one cent per K. W. hour. The average amount of power used per cubic yard of material moved was 0.9 of a kilowatt

hour. Where the digging was easy, a minimum of 0.39 was reached.

The Dragline Excavators

In the summer of 1913, the Reclamation Service purchased two Bucyrus class-9½ electric dragline excavators for work on the Minidoka Project near Heyburn, Idaho. In October 1914, one of these machines was transferred to the Fargo Basin work on the Boise Project. In December 1915, the other machine was moved to the Nampa & Meridian Drainage work on the Boise Project, which we will mention later on. Two other Bucyrus draglines of the same size were purchased in the fall of 1913 and placed on the Pioneer Irrigation District work above described. Each dragline had a 50-foot boom and a 1¼-yard bucket and weighed about 55 tons. The main machinery was driven by a motor of 50 H. P. continuous and 80 H. P. intermittent rating and the swinging machinery by a 25 H. P. motor.

The character of the material over which the excavators operated was so soft that caterpillar mounting was chosen. These caterpillars gave a bearing pressure of 920 pounds per square foot with a bearing surface of 120 square feet. For the greater part of the work, however, it was necessary to operate on platforms or timber mattresses which increased the bearing surface to 320 square feet and reduced the pressure to 344 pounds per square foot.

Output of the Draglines

The remarkable output of the draglines has attracted much comment. The uniform excellence is due to a measure to the system by which the engineers in charge have created a spirit of friendly rivalry among the operators of the machines, and by keeping careful records of each man's work and publishing these records. At the end of each shift, which is 8 hours long, the operator stakes the ditch completed by him during that shift, each operator having different colored stakes. Thus the engineer is enabled to inspect the quality of each man's work and each operator can see what kind of work his predecessor had done. At the end of each month an efficiency report for each man is completed. One of these reports are published below. These reports are based only on digging time, that is the time spent in moving the machine from ditch to ditch and in making general repairs is deducted. The figures for the number of shifts dug, includes all shifts in which any excavation was accomplished. If a breakdown occurred during the first hour of an operator's work and the remaining seven hours were spent in repair work, this shift would be counted in the record.

We quote below from a letter from J. L. Burkholder, assistant engineer on the Boise Project, to the Reclamation Record, in reference to a remarkable record made by one of the class 9½ draglines

Another class-9½ at work on the Pioneer Irrigation District. In the foreground may be seen the poles for carrying the temporary transmission line which brings the power to the machines.

on the East Caldwell drain on the Pioneer Irrigation District.

Attached you will find a record of the operators' efficiency for the month of August, which I believe to be remarkable for machines of this class having 1¼ cubic yard buckets.

The machine was operated from noon on August 14 continuously to the end of the month, and approximately three-quarters of the length excavated was in hard material which had to be blasted, 600 pounds of dynamite being used during the period.

At the rated capacity of the bucket used (1¼ yards) the dirt was moved at an average rate of two buckets per minute straight time from noon on the 14th to the end of the month; or, expressed in yardage, the average would be 2.3 cubic yards per minute. Counting the time actually spent in digging, the rate of digging was 3 yards per minute.

Record on 1¼ cubic yard electric dragline excavator Boise Project, August, 1915.

No. 1 Dragline, East Caldwell Drain

Operator	Amount Excavated		Average Number of Cubic Yards Excavated	
	Linear Feet	Cubic Yards	Per Hour	Per Shift
Martin	3,150	22,617.5	185.8	1,256.5
Gibson	2,680	19,787.7	175.9	1,164.0
Wirth	2,080	16,184.3	173.6	1,135.7
Total and average	7,910	58,589.5	178.9	1,189.6

Highest run per shift this month: 1,573 cubic yards.
Number of shifts dug: 49¼.
All Pioneer District records broken.
Excavation started August 14, 1915.

Machine Efficiency, Machine No. 1

	Hours	Per cent.
Digging	327:30	77.2
Mechanical repairs	58:30	13.8
Electrical repairs	24:30	5.8
Moving	12:45	3.0
Blasting	:45	.2
Total	424:00	100.0

The total yardage excavated by the two machines on the Pioneer District under the original contract was 1,755,238 cubic yards neat measurement. Probably 20 per cent of the material would class as hardpan. A total of 16,200 pounds of dynamite was used in blasting. All of the material was saturated and often very soft and miry. Both excavators were operated continuously, three eight-hour shifts per day, with the exception of the month of January 1915 when work was suspended be cause of deep frost and a 10-day delay on one machine in September, 1914.

The best month for one machine on the original Pioneer contract was made in March 1915, on the Solomon Slough Drain. We give this below.

Total yardage....88,633 cubic yards
Average per hour....155.3 cubic yards
Average per shift....996 cubic yards
Highest shift (operator, Wirth)....1436 cubic yards

The machine was operated by Messrs. Wirth, F. Highley and A. L. Lilburn.

The highest averages made by individual operators were kept and published, as stated. On the original contract from February 1914, to June 1915, inclusive, the highest average per hour was made by Martin, 133.1 cubic yards. His average number of hours actually worked per 8-hour shift was 6.13. The highest average per shift was made by Stone with 850 cubic yards, working an average of 6.71 hours per 8-hour shift.

As stated, the work on the Fargo Basin was somewhat easier, and we give below the average for the month of March 1915, on the Laht and Griffith Drains.

Total yardage....84,743 cubic yards
Average per hour....180.3 cubic yards
Average per shift....1176 cubic yards
Highest run per shift (operator, Martin)....1701 cubic yards
Shifts worked....72

In September 1915, on the Midway and Nampa Drains of the Pioneer District, under the supplemented contract, the following were recorded:

Total yardage....64,194 cubic yards
Average per hour....177 cubic yards
Average per shift....1187 cubic yards
Highest run per shift (operator, Stone)....1882 cubic yards
Shifts worked....54

Cost of Operation

The crews employed consisted generally of three men, an operator, an oiler and a laborer. The laborer, however, was only used when blasting was necessary.

We give below the unit cost of the work per cubic yard on the Pioneer Irrigation District accomplished under the original contract, exclusive of depreciations and overhead cost.

Labor:—On excavations	.0105	
On repairs	.0044	
On blasting and drilling	.0012	
On moving machine	.0029	
On clearing right of way and trimming banks	.0006	
On engineering and superintendence	.0033	
Total labor cost		.0229
Electrical power at .01 per K. W. hour	.0088	
Repair parts and miscellaneous supplies	.0077	
Wire rope and armored cable	.0015	
Blasting supplies	.0015	
Total unit material and supply cost		.0195
Electrical installation of transmission lines	.0125	
Total unit cost		.0549

The work has been under the general supervision of F. E. Weymouth, supervising engineer of the Central Division of the U. S. Reclamation Service. F. T. Crowe construction engineer, is in immediate charge of the work, and J. L. Burkholder, drainage engineer in charge of the drainage investigations on the Boise Project.

Nampa & Meridian Irrigation District Work.

In December 1915, work was authorized on the Nampa & Meridian Irrigation District on the Boise Project which contemplates the construction of about 60 miles of drainage ditches involving the excavation of approximately 3,000,000 cubic yards of material. The four class-9½ draglines above mentioned are now at work in this district and are moving about 250,000 cubic yards per month.

D. W. Cole, senior engineer, Central Division, U. S. Reclamation Service, has general supervision of the work. F. T. Crowe is in immediate charge of the excavation operations and J. L. Burkholder has supervision over the location of drains and general drainage investigations.

We are indebted to Messrs. Williamson, Weymouth and Cole for much of the above data.

Panama Dredging Records Again Smashed

In the 24-hour period from midnight to midnight on Friday, February 18th, the Bucyrus 15-yard dipper dredge, *Cascadas*, made a new world's record for a day's work in hard material. We quote below from the Canal Record, the official publication of the Isthmian Canal Commission, for February 23rd, 1916.

"The new 15-yard dipper dredge, *Cascadas*, excavated and loaded into scows on that day a total of 23,305 cubic yards of rock and earth. This is believed to be the world's record for a day's work by any kind of excavating machine in hard material.

Taking its weight at 3,000 pounds to the cubic yard (approximately 110 pounds to the cubic foot), the weight of the material dug by the *Cascadas* was approximately 35,000 tons. What is claimed to be heaviest train ever hauled by one locomotive from Baltimore to Philadelphia, consisting of 55 cars of coal, carried 4,102 tons. The output of the *Cascadas* on February 18 weighed more than the contents of eight such trains. The displacement tonnage, or weight complete, of each of the latest battleships of the United States Navy, the *Idaho*, *Mississippi*, and *California*, now under construction is to be about 32,000 tons. The displacement tonnages of the *Missouri*, *Ohio*, and *Wisconsin*, first line battleships eight years ago, which passed through the Canal on the midshipmen's practice cruise of 1915, were 13,450, 13,900 and 12,830 tons, respectively, an aggregate of 40,180 tons.

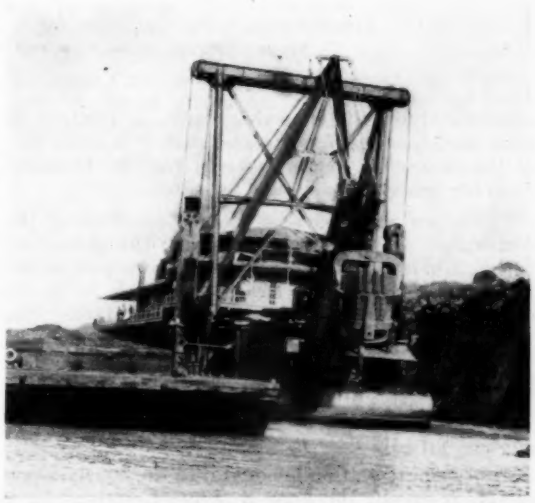
The actual working time of the *Cascadas* having been 23 hours and 15 minutes during the record day, the rate of output was slightly over 1,002 cubic yards an hour. This is about 1,500 tons an hour of 25 tons a minute."

The *Cascadas* is the newest of the three Bucyrus 15-yard dipper dredges now at work on the slides. It started operations on October 31st and has been working steadily ever since. The above record was made in three 8-hour shifts. The crew for these three shifts was as follows:—From 12:00 midnight to 8:00 A, M.—A. Barton, operator; D. J. Evans, cranesman; T. L. Byrne, engineer. 8:00 A. M. to 4:00 P. M.—W. A. Tedford, operator; J. D. Trower, cranesman; G. A. Moles, engineer. From 4:00 P. M. to 12:00 midnight—C. E. Peterson, operator; F. Morton, cranesman; N. Chowaldjy, engineer. Bernie E. Swain was master.

The highest average per hour was made in Tedford's shift, namely, a little over 1,023 cubic yards per hour.

As stated, the dredge actually operated 23 hours and 15 minutes, 45 minutes being lost, due to delays. 35 minutes of this time was due to waiting for scows and 10 minutes to tightening bolts on the dipper.

According to the Canal Record of March 1st, during the 29-day month of February, the dredges working at the bases of the Culebra slides excavated a total of 1,039,950 cubic yards. The Bucyrus 15-yard dredge, *Cascadas*, dug 330,605 cubic yards a new high monthly record and the Bucyrus dredge *Gamboa*, 293,230 cubic yards. The *Paraiso*, the third of these Bucyrus dredges, excavated 236,235 cubic yards. The previous high monthly record was made during December by the *Cascadas*, namely, 321,065 cubic yards.



The Bucyrus 15-yard dredge Cascadas, at work on the slides. This dredge dug 23,305 cubic yards in 23 hours and 15 minutes and 330,604 cubic yards in the 29 days of February.

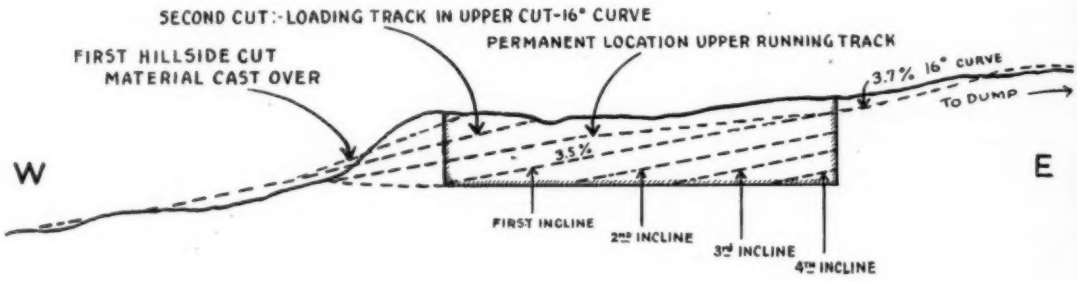
Excavation of the Baldwin Reservoir, Cleveland, Ohio

An interesting piece of steam shovel work being handled by the Fred R. Jones Company How the problems were solved. (See panorama view, pages 260 and 261.)

THE Fred R. Jones Company are at the present time, engaged in the excavation of the Baldwin Reservoir for the Water Department of the City of Cleveland, Ohio.

We publish in our center page spread, an interesting panorama view which gives a very good idea of the lay-out of the job and the character of the material encountered.

Excavation work on the reservoir was begun in May, 1915. The total amount of excavation involved is 750,000 cubic yards of which 230,000 is earth, 350,000 slate and shale and the remainder, approximately 170,000 cubic yards, a mixture of blue sandstone ledge, slate and shale. A good idea of the character of this material may be obtained from our center page spread, as stated.



Sketch illustrating method of making preliminary cuts on the Baldwin Reservoir

This new reservoir is located on a hill about 100 feet higher than the general level of the ground on the east side of Cleveland. Immediately opposite is the old Fairmount Reservoir which is to be abandoned, as the new one will take its place. The Baldwin Reservoir will have a storage capacity of 140,000,000 gallons of water and will have 40 feet greater head than the Fairmount Reservoir.

Equipment Used

For the excavation incidental to the construction of this reservoir, the Fred R. Jones Company have used one 70-C Bucyrus shovel, one 100-C Bucyrus shovel, thirty-four 12 and 30-yard air-dump cars, four 6-wheel switcher type locomotives, one Cyclone well drill, two Ingersoll-Rand tripod drills, one Ingersoll-Rand turntable wagon drill and two portable boilers. The track is laid with 80-pound rail with standard ties balasted with cinders.

Problems Encountered

The organization of the work, the laying out of the tracks and the installation of the plant has in many ways been difficult. It was necessary to grade and lay a half mile of track with a maximum grade of 3½% and a maximum curvature of 21 degrees, from a connection with the New York Central Railroad through the streets and the city park property up to the reservoir site. This track was used to move equipment to the site of the reservoir and for the handling of coal and supplies. The reservoir site was on a hillside, see sketch.

The 70-C shovel was used to make a hillside cut up to the top of the reservoir site, the excavated material being cast over, and to dig an approach cut into the southwest corner of the reservoir. An abandoned quarry located inside the city park limits was utilized as a dumping ground for the material excavated from the reservoir. This quarry when filled, will become valuable land and an unsightly hole will thus be eliminated. The haul is 1½ miles long with a 4½% grade on the Fairmount road. At the foot of this grade there is a sharp curve crossing the intersection of two park driveways. A 100-foot ravine which carries the

overflow water from Shaker Lakes, a part of the city park system, has to be crossed by means of a wooden trestle. The above presented many preliminary difficulties to the contractor. Furthermore, inasmuch as the reservoir is within a district occupied by wealthy residents and beautiful homes, and as both sides of the basin are lined with buildings, it has been necessary to use extra precaution in blasting in order to avoid as much as possible, unnecessary noise and annoyance.

The Basin

The extreme dimensions of the basin are 1050 feet by 590 feet. This includes an offset or bench of 7 feet running entirely around the basin. This bench which is 12 feet in depth is provided in the earth excavation, as may be seen in our panorama view. This offset or bench will eventually contain a hollow type of concrete wall, or in other words, a slab projecting back on the 7-foot bench, which when refilled, will form a bond against any hydrostatic back pressure when the reservoir is empty.

The First Lift

The preliminary excavation and also the first cut which was entirely in the earth excavation, was made by the 70-C shovel. This cut contained mostly earth with some loose slate. The shovel worked double shift and moved 70,000 cubic yards a month. This output is considered very good when the difficulties which had to be overcome and the heavy grades and curves are taken into consideration.

The Second Lift

The remainder of the excavation was, as stated above, rock work, and the cut averaged about 25 feet in depth. The method of operation is interesting. The excavation of the basin proper was started by means of a series of inclines, see sketch. In order to understand the method of proceedure, it should be kept in mind that the long way of the basin runs east and west. The first incline was cut along the south wall of the basin in such a manner that the south side of the cut came on the rock neat line, thus completing this portion of the south rock face. The incline was started at thewest end at grade and ran up on a 3.05%grade. This incline or cut connected with the upper or bench track at both the east and west ends, thus completing a run-around. The 7-foot bench which was taken out on the first cut by the 70-C had been widened 2 feet on this first cut in order to allow room for the loading track for the first incline.

When the first incline was completed, a track was then laid here, connecting as stated, with the bench on both the east and west ends of the basin. Thus loads could be hauled from the pit at both ends. A new incline was then cut to one side of the first incline. This went in at grade until the loading track on the first incline was 8½ feet above the shovel track. The shovel then cut its way up to the east end of the basin on the same grade as the first incline. This incline in turn served as a loading track and a third incline was cut in a similar manner. This process was continued until the entire length of the pit was opened on grade. The shovel was then backed to the toe of the second incline and all but the first incline was removed, a connection from the bottom of the pit being left with this incline in order to serve as a runway out of the pit.

Now that a good working width was provided at the base of the reservoir, the excavation of the main bank was resumed which, as stated, averaged about 25 feet in height.

All inclines were 24 feet wide, but half of this was removed on the next cut, sufficient room being left for the loading track. The grades were all 3.05%.

During the excavation of the pit, the dump trains were handled in the usual manner. Regular sized trains were loaded, backed up to the connection with the first incline and then hauled out of the pit.

At the present time the work is being carried on by the 100-C Bucyrus shovel with ten 30-yard cars and four locomotives, an average of 40,000 cubic yards of blasted material being removed per month. Weather conditions, however, have seriously interfered with the work, much time having been lost due to heavy rain and snow storms.

Water is obtained from the city water lines and the locomotives are watered by means of a 6000 gallon tank with spout attachments.

The drainage of the basin is taken care of by means of a double line of pipe running from a sump, built at the mouth of the approach into the basin, into a city sewer.

The Contractor's Camp

A camp for laborers consisting of three large bunk cars with separate kitchens is provided. These were supplied with city water and garbage disposal service. A first-class repair shop with steam driven machinery is located on the work and equipped with an air compressor, a drill press, a hack saw, a bolt threading and cutting machine, an emery wheel, a 400-pound steam hammer and two power forges. An engine house with washout pit has been built. The contractor's office is a converted standard railroad car. Two large cars are provided for carrying supplies and repair parts.

We are indebted to Messrs. Fred R. Jones and D. B. Hamer for the above information.

The Excavating Engineer

A Monthly Publication Devoted to Excavating and Allied Subjects

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Advertising copy should reach Milwaukee Office by 10th of month before date of issue.

Address all communications to the company.

THE EXCAVATING ENGINEER PUBLISHING CO.

Bradlee Van Brunt, Manager and Editor

267 National Avenue Milwaukee, Wis., U. S. A.

Prospective Construction

At last there is something doing in the railroad construction field. Two good sized railroad undertakings developed in the week of March 12th. The Pennsylvania has let a contract for 41 miles of new line in Indiana and the Union Pacific, for a branch line in Wyoming and Colorado. This is the first work of any importance that has developed into something tangible for a great many months. We feel that it is of more than usual significance, as it undoubtedly is a sign that the immense amount of new construction which has been held up so long owing to existing conditions, is about to be started. The only work that the railroads have done for sometime has been much needed betterment, reallignment and double tracking, but the construction of new lines, branch lines and extensions has been practically at a standstill.

The improvement in the railroad investment market, which we have noted from month to month, still continues. The January reports of the railroads indicate a substantial gain in both gross and net revenue over January 1915, although the ratio of this increase is not as great as during November and December. This improvement moreover, seems to extend to all classes of roads in all parts of the country with the possible exception of a few instances in the Southwest where the short cotton crop has resulted in some losses. The Mexican situation instead of acting as a depressant, seems to have had the opposite effect.

Large highway and road construction jobs are making their appearance. It looks as if construction work in this field will be even more active than it was last year.

William Stanton

Wm. Stanton, one of the oldest dredge men in the country, died at his home in Buffalo, N. Y. at 1:30 A. M. on March 7th, at the age of 77 years. Mr. Stanton has many warm friends and a host of acquaintances throughout the country and his loss will be deeply felt. He was born in Ireland on August 12, 1839 and came to this country with his parents at the early age of four years, making his home in Buffalo. Here he attended the public schools up to the age of fourteen, at which time he started to work. Between the ages of fourteen and seventeen, he ran a ferry across the Buffalo River from the foot of Main Street to the Island. At seventeen he went into the shipbuilding business learning his trade in the Jones Ship Yards. From here he went to Port Colbourne, Ontario, where he built the tug *Hector*, known as one of the fastest tugs in Canadian waters. His next position was superintendent for the building of the aqueduct in the Welland Canal. In August 1888 he became an employee of the Bucyrus Foundry and Manufacturing Company of Bucyrus, Ohio, now the Bucyrus Company of South Milwaukee, with whom he has been associated ever since. At the time of his death, Mr. Stanton was the oldest employee of the Bucyrus Company, having been connected with this company for nearly twenty-eight years, serving during this time as superintendent of dredge erection.

Patrick T. Walsh

Patrick T. Walsh, railroad contractor, died at his home in Davenport from a stroke of apoplexy on March 16, at the age of 61. The tributes which have poured in from railroad presidents and other important men from all parts of the country, speak eloquently of the place which he has made for himself and the love and esteem with which he was held.

Mr. Walsh was born in Davenport on March 17, 1855, his parents having come over from Ireland and made their way up the Mississippi River in 1848. At 11 years of age he began work in a saw mill and two years later, became an apprenticed stone cutter on the Rock Island Arsenal. He remained here for eleven years, when circumstances led to his going into the contracting business in an

(Continued on page 272.)

· FIELD NOTES ·

QUESTIONS pertaining to the operation, maintenance or repair of excavating machinery wil be answered through this column. Address, Field Note Department, Excavating Engineer, P. O. Box 607, Milwaukee, Wisconsin.

More Examples of Daily Report Sheets

We publish herewith fac-similes of two reports used by James O. Heyworth of Chicago. The upper sheet is the superintendent's daily report and is intended to give a general summary of all work done on each job. This report is made up in the field office from memoranda and reports made by the various foremen and others. The first column it will be seen is devoted to the classification of the work such as excavation, concrete, reinforcing, etc. The second column is used for the total estimated quantities of work to be done at the time of securing the contract. In the third column is inserted the daily quantities of work performed, the fourth for further descriptions or remarks and the last for the name of the foreman in charge of the work done. The top portion of this sheet is used for permanent work performed and the bottom, for plant installation, dismantling and other temporary work. The reports are made up in the main office daily, and the quantities summarized monthly.

The foremen's report reproduced below is a general report for this particular job, namely, the Calumet-Sag Channel work which is now in progress. This form naturally varies considerably on different jobs according to the nature of the work to be done.

DAILY REPORT

JAMES O. HEYWORTH

ENGINEER AND CONTRACTOR

HARVESTER BUILDING CHICAGO

No. _____ 191__

Job _____ Weather _____ Gauge: Lower _____ Upper _____

Pay Roll $ _____ No. of Men _____ Total Hours _____ Temperature _____

Classification	Quantity	Daily Quantities	REMARKS	Foreman
Brick Work				
Collection				
Concrete	70000 Cy			
Earth Embankment	60000 Cy			
Machinery Erection				
Mortrom Work	5000 Sy			
Mortar Finish				
Piles, Wood	211000 ft.			
Piles, Steel	6500000 lbs.			
Piles, Wood Sheet	130000 ft.			
Puddle Wall	1000 Cy			
Reinforcing	2547,200 lbs.			
Rock Fill	10,000 Cy			
Steel Excavation	74000 Cy			
Steel Erection				
Stone Paving				
Timber Work				
Water-Proofing	4000 Sy			
Final Installation, Poles Work, Etc.			REMARKS	

Digging the second cut for the Baldwin Reservoir, Cleveland, Ohio. The Fred R. Jones Co., contractors. 100-C Bu
bench, mentioned in the text on page 256, may be seen in both lower corners. This bench

The tracks of the Illinois Central in N
order to serve as a part of the po
H. W. Nelson's 70-C Bucyrus sh
for this purpose. The contractor
from the railroad company and
A part of the time they are wo
During December, some wi
moved. The work at the
up owing to local con
sumed until June o
assistant engineer
is in direct ch

The views to the right and left show a
house at Decatur Avenue and 195th Stree
to 14,000 cubic yards of hardpan and
of this material in nine hours. Beside
employed. The shovel is an 18-B, ¾-ya
Troy. Handy Bros., contractors.

100-C Bucyrus loading 30-yard Western cars. Note the character of the material. The upper cut has been completed. The 7-foot
This bench carries the run-around track. Connection with the loading track in the pit is made at both ends.

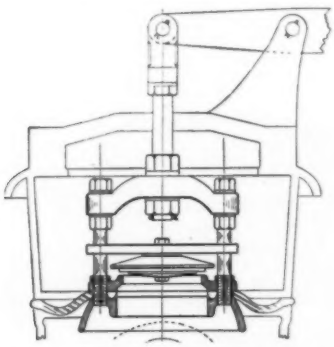
ral in North Memphis, Tenn. are to be raised in
the proposed levee system. This view shows
yrus shovel loading material in a borrow pit
ntractors are using three locomotives, leased
any and thirty 12-yard Western dump cars.
are working single and part double shift.
some what over 50,000 cubic yards were
k at the present time has been held
cal conditions and will not be re-
June or July. E. L. Cruger,
ngineer of the Illinois Central,
rect charge of the work.

how a revolving shovel excavating for an apartment
h Street, New York City. The excavation amounted
and boulders. The shovel has dug 500 cubic yards
Beside the engineer and fireman, two pit men were
¾-yard Bucyrus and the dump wagons are 2-yard

DEVICES YOU OUGHT · TO KNOW ABOUT ·

A Marked Improvement in Diaphragm Pumps They Now Rank with Other Types of Pumps in Efficiency

For many years contractors and others have been using, and have been compelled to use, the ordinary diaphragm pump which, operated by hand labor, and with its loose connections and quickly wearing parts was expensive and very inefficient. With the adaption of the diaphragm pump to use with a gasolene engine it became necessary to strengthten and otherwise improve the pump in order that it might give service in step with the engine. Wear and tear was excessive; the pump splashed badly and the combination caused more or less trouble just at some critical time.



The New Valve that Increases the Capacity Nearly Double

The manufacturers of the Atlantic Pumping Engine gave early heed to the demand for an improvement and determined to produce a pump that should compare favorably with the Atlantic Engine in durability, efficiency and economy. The result was an entire new top head shown in cut, which eliminates every objection to an engine driven diaphragm pump, besides which a decided increase in the capacity of the pump was secured. The advantages which every user of a diaphragm pump will appreciate may be listed as follows:—

Capacity of pump increased more than one half.

Annoyance of splashing water eliminated.

Positive piston stroke to diaphragm, prolonging life of diaphragm materially and giving full and regular length of stroke.

Rigid fulcrum of pump, avoiding breakage of bolt connection.

Improved waterway, increasing flow of water to pump, reducing friction and insuring a perfect valve seat.

The result has been to increase the prestige and demand for the Atlantic Pumping Engines and to persuade contractors to install one of these engines with either a single or a double diaphragm pump on work, where they have previously required pumps either more expensive in installation or in operation. A full descriptive catalog may be obtained by addressing:—Harold L. Bond Company, 383 B Atlantic Avenue, Boston, Mass.

A Correction

In the last issue of the Excavating Engineer we published a short article in reference to the new Smith-Chicago high-drum paver which created such favorable comment at the recent cement show in Chicago. In this article there appeared two rather serious mistakes. In the first place we spoke of the swivel chute which may be seen on the view herewith, as being a 14 inch chute, whereas it should have been a 14-foot chute. The second error was in speaking of the angle at which this chute was pitched, which should have been 20 degrees.

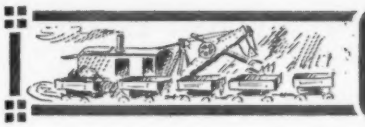
We mention this last particularly, as it is a very important feature of the new paver in that the angle is sufficiently steep to allow the stiffest concrete which is used in road work, to slide down it with ease. It might be interesting to add here that this chute is equipped with four intermediate discharge openings and an auxiliary swivel chute so that the concrete will not have to drop to the ground. This furthermore, provides a wide area of operation over which the concrete may be placed without the necessity of moving the machine for this purpose.

Another interesting device which has attracted much attention is a method by which the amount of water used for each batch, may be accurately obtained by weighing instead of measuring by volume, as has been the practice in the past. The operation is automatic. The mixer is known as No. 507 High-Drum Smith-Chicago Paver, and is manufactured by the T. L. Smith Company, 3121-A Hadley St., Milwaukee, Wis., from whom full information and literature may be obtained.

Unromantic Similes

From the Ladies Home Journal:—"His arms went round her like calipers." Can you imagine a simile more unromantic?

Sure. "He kissed her like a cow pulling its foot out of the mud." *The Chicago Tribune.*



SHOTS FROM THE · FIRING LINE ·

Arkansas

Russellville—A contract has been awarded to W. C. Jackson for constructing 26 miles macadam road.

California

San Francisco and Vicinity.

By G. H. Hutchinson

The Kern County Highway Commission are operating a quarry at Woodford, Cal. and the excavating is done by the aid of a powder man and a 45-ton Bucyrus. A short time ago the powder man took a fall out of the Bucyrus and Mr. John Steigh, superintendent of quarries, came into San Francisco seeking first aid to the injured and advised after the powder man got through with the shovel, it was necessary for him to purchase an entirely new dipper, dipper handle, padlock and a shipper shaft. A peculiar thing about the accident was the fact that a large rock landed on top of one of the cast iron shipper shaft gears shearing the shipper shaft off but not injuring the gear. Mr. Steigh is an old timer in the business, having worked for Henry Whitley on the Bay Shore Cut-off, Sharp & Fellows and a number of other contractors and seems to be exceptionally well posted regarding San Francisco. He pointed out to the writer a number of places of interest before the fire.

Palmer & McBryde have secured the contract for the excavation of 30,000 yards in connection with building of the Chevrolet Auto Assembling Co's Plant in Oakland Cal. Most of the material to be removed is adobe which is being dug with a Bucyrus 25-B on caterpillar trucks. George Snorsen will operate the machine.

Bakersfield—Contract for construction of section No. 8 of Bakersfield, Mojave highway has been awarded to Robert Sherer, Pacific Electric Building, Los Angeles, for $29,881.75.

Contract for construction of section No. 6 of Bakersfield-Glenville road has been awarded to Castro & Blaisdell for $9,192.02.

Contract for construction of section No. 4 of Bakersfield-Taft road has been awarded to George S. Benson & Sons, Stimpson Building, Los Angeles, for $56,547.08.

Canada

Winnipeg, Man.—E. P. Hayward and F. J. Brewer are at the present time erecting and starting class-24 and class-20 Bucyrus draglines for the Winnipeg Aqueduct Construction Company. This makes a total of eight Bucyrus draglines that this concern have on the job, in addition to two more that have not as yet been delivered. They are all to be used on the construction of the new Winnipeg Aqueduct.

Montreal and Vicinity.

By R. St. John

Some of the main items for new works, or for the continuation of works already begun, contained in the estimates of the Dominion Government for the current year, are : Port Arthur and Fort William harbor improvements, $1,000,000; Quebec drydock, $1,500,000; St. John Harbor improvements $1,000,000; Intercolonial Railway bridges $483,000; Halifax terminals $3,000,000; Quebec Bridge $3,450,000; Hudson Bay Railway $3,000,000; National Transcontinental Railway $1,500,000; Welland Canal $4,500,000; Trent Canal $1,000,000.

Another $2,000,000 has been authorized by the City Council of Montreal for carrying on the improvements to the city aqueduct on which about $6,000,000 has already been spent.

D. E. Gilmour, a well known Bucyrus steam shovel engineer here, has left Canada to try and land something in the U. S We wish him the best of luck.

The Dominion Government recently set aside to start the years work, the following amounts for Public Building Works:—Ontario, $3,250,000.00; Toronto, $2,225,000.00; British Columbia, $2,250,000.00; Montreal, $4,750,000.00; Alberta, $1,250,000.00. These are only a few of the appropriations which were made public.

Parliament Buildings, Ottawa, will require two years to rebuild and will cost $1,500,000.00.

Ontario Power Company will spend $3,000,000.00 to increase by one-third the amount of power the Company can at present generate. The work will require two years.

While the tenders for the construction of the second section of the St. John Valley Railway were closed on December 30th last, the name of the successful bidder has not been published as yet. A great many contractors with idle equipment are anxious to secure sub-contracts on this work and when the name of the successful bidder is made known, he will be mobbed.

L. A. Ott expects to have all kinds of work in the spring, as he has a contract with some large filtration equipment people in Philadelphia, and expects to make a specialty of this class of work if this style of filtration plant makes good in Canada.

The Montreal Board of Control has appropriated approximately $2,000,000.00 to carry on the aqueduct which is being constructed by the Cook Construction Company. This is a very interesting piece of work and the Cook Construction Company have three Bucyrus draglines, one Bucyrus steam shovel and about one hundred Western air-dump cars in service on this job.

Anyone interested in construction work should visit the Ocean Terminals now under construction at Halifax. Cook Construction Co. Limited and Wheaton Bros., have part of this work. and Foley Bros., Welch, Stewart & Fauquier have the remainder. There are some of the very latest machines on this job and the equipment alone is worth travelling a long distance to see.

Business conditions are improving steadily in Canada. Railroad earnings are increasing by leaps and bounds, and people who should know, predict a banner year for 1916. Let us hope that they are right as 1915 was bad enough.

Vancouver and Vicinity.

Work has started on the erection of the plant for the Vancouver Creosoting Co. The piling and bulkhead contract has been awarded to Palmer Brothers and the filling contract to the Pacific Dredging Company.

It is expected that arrangements will be completed shortly whereby the Canadian Northern Railway will purchase right-of-way along the Fraser River, which will enable it to link up its main line with steel already laid on Lulu Island, extending to the proposed permanent ferry terminus at Woodward's Landing.

It is expected that the new Kettle Valley route over the Hope Mountains will be ready for traffic when the C.P.R. puts the summer schedule into effect on June 1st.

The Canadian Northern Railway has recently acquired that section of the old main line of the Great Northern Railway between Fraser River bridge and Port Kells.

The Dominion Government contemplates an irrigation project north of Lethbridge, Alta. that will comprise about 100,000 acres. The engineering staff of the Department has been working on detailed surveys for some time. There are several other projects under way, such as the Taber extension (nearing completion) comprising 17,000 acres, and also a 350,000-acre

block east of Lethbridge, upon which the Irrigation Branch of the Department are at present conducting surveys.

During 1915 three hundred and twenty-six miles of new railway were constructed in the province of Alberta. With the exception of 22 miles built by the C.P.R., the entire mileage was constructed with the aid of government guarantees. The new mileage is credited to the various lines, as follows: Canadian Pacific Railway, 22 miles; Canadian Northern Railway, 59 miles; E., D. & B.C., 97 miles; A. & G. W., 100 miles; Central Canada Railway, 48 miles.

Colorado

Denver and Vicinity.

By H. N. Steinbarger

About the middle of last month, the Union Pacific Railroad Company awarded the contract for double tracking in western Wyoming and Utah, to Kilpatrick Bros. and Collins Contracting Company of Beatrice, Nebraska. Approximately 3,000,000 yards and three tunnels with a total of 16 miles will indicate how heavy this piece of work is. It will form another link in the double tracking which will eventually connect Cheyenne, Wyoming with Ogden, Utah.

Sam Griffin is in his element right now. The right hand man in the right place, in supreme charge of the above work and with full command of the mass of details essentially a part of the starting of such an important project. "On the job" and "Do it now" are the thoughts that govern, and it generallly moves the earth. Some class to the speed with which the Kilpatrick Bros. and Collins Contracting Company of Beatrice, Nebraska, covered the big Union Pacific double track work in western Wyoming and Utah. Sixteen miles, and 3,000,000 yards and in less than three days, ten sub-contracts let and the ten sub-contractors scattered in almost as many directions to load equipment. In a week's time practically every outfit was loaded and on the way. This however is characteristic of this company and their following of record breakers.

Sprague, Nisely & Purdy, "some combination" everybody says! Only fault we find is the necessity for keeping a pencil sharpener right handy when we write it. "Some outfit" they now have, two 70-C Bucyrus shovels, one a new one, both complete with electric lighting plants, five Vulcan 20-ton locomotives, three of them new about sixty Peteler 4-yard cars and a big team outfit, and by the way, they will need it for the 800,000 yards they will move on the Union Pacific work near Castle Rock, Utah.

The Contractors Club—that is the name definitely decided upon. Broad and welcome sounding, is'nt it? Located in Denver, but confined to no limits and every bona fide contractor in the United States is eligible. It's a real headquarters for the elite of the brand, and was the home of the best Pitch players we ever heard of. We say "was" because there are but a baker's dozen left since the opening of the Union Pacific double-track work.

Arthur & Potter of Pueblo, have landed a nice 100,000 yard job near Colorado City, Colorado, They have a big team outfit employed and great progress has been made. The work consists of covering with a four foot layer of earth, an old mill tailings dump to prevent the dust blowing in great clouds all over that district.

The Pueblo Bridge Company, Pueblo, Colorado, have for years handled considerable work in excavating, bridges and concrete construction and with considerable success. Lately they have embarked in earnest in the earth moving game, having secured a 200,000-yard job of stripping a limestone quarry owned by the Colorado Fuel & Iron Company, near Lime, Colorado. It didn't take them long to acquire complete steam shovel plant. Time would not permit waiting on deliveries of new equipment, so the entire plant was secured from the vicinity of Pueblo. Here's hoping their job will prove most satisfactory in all details.

Craig—Kilpatrick Bros. of Beatrice, Nebraska, have been awarded the contract for grading a branch line of the Union Pacific from Wamsutter, Wyoming to Craig, Colorado, through the Uintah Valley, Colorado. Beside the Union Pacific, the Denver & Rio Grande and the San Pedro, Los Angeles & Salt Lake have been planning to build a line in this valley. It is possible that these other roads may now proceed with the work. This is the first new branch line to be started by a western railway for nearly two years.

Concrete—W. McAdams is operating a new Bucyrus 40-R steam shovel for the U. S. Portland Cement Company at their plant here. H. S. Munroe is superintendent and general manager in charge of operations.

District of Columbia

Washington—Brigadier-General W. M. Black, corps of engineers, United States Army, has been appointed chief of engineers of the United States Army, succeeding Brigadier-General Dan C. Kingman, who was retired March 6th on reaching the limit of age.

General Black graduated from West Point in 1877, at the head of his class. Later he was on duty on improvement work on the Great Kanawha River and on other river and harbor work until 1897, when he was made engineer commissioner of the District of Columbia. In this position he prepared the accepted plans for grade crossing elimination in the City of Washington.

During the Spanish-American war he served as chief engineer of United States Volunteers and had charge of gathering the engineer material for the field army for the Santiago campaign. After the war he was appointed chief engineer of the Department of Havana, and began the work of cleaning up the city, rebuilding wharves, etc. A year later he became chief engineer officer of the Division of Cuba and supervisor of the Department of Public Works. He drew up a code of regulations for the conduct of work and also had charge of the preparation of plans for the sewerage and paving of Havana, a $16,000.000 project now being completed.

In 1901 he was assigned to duty in Panama, observing the operations of the French Canal Company. Upon American intervention in Cuba in 1906, he was made advisor of the Department of Public Works, in which capacity he built a comprehensive system of highways and other extensive engineering and improvement works.

He later served as chief engineer of the Eastern Division, having charge of the New York district river and harbor improvements.

Florida

Tallahassee—Contract for constructing Dixie Highway has been awarded to Cryson & Bryson, Jacksonville, Fla. Will include 76,583 cubic yards excavations; 32 miles sand-clay road, 15 feet wide; 495 cubic yards class "A" concrete; 110 cubic yards class "B" concrete; 13,794 pounds steel; 390 feet concrete culvert drains and about 1,700 feet 12 to 30-inch drains.

Illinois

Chicago and Vicinity.

By H. E. Scott

Russell Condon of Omaha, Nebr., stopped off for a few hours in Chicago. Mr. Condon has been in Washington, D. C. for a few weeks adjusting his contract with the Government in the Northwest.

The West Park Board awarded the grading of the New Park to J. J. McCaughey Co. Frank can do *some* work with the pencil.

M. W. Woolsey of the Woolsey Construction Co. of Rochester, N. Y., reports his work on the N. Y. State Barge Canal as ready to start as soon as the weather permits.

P. J. McGraw of St. Louis, Mo. was calling on friends. Paddy is looking fine.

Nathan Elmer of the Elmer Labor, Agency So. Canal Street, Chicago, died very suddenly Saturday the 18th, We extend sympathy to his family.

H. F. Riley of Clapp, Norstrom & Riley has been spending the last ten days, down in Arizona. He will be able to give a correct account of the doings on the border.

Wm. List of List and Gifford of Kansas City, was in Chicago lately looking up equipment for his work in the southwest.

J. J. McCongley & Co. were awarded a nice piece of team work on the Burlington Road in Missouri.

Chas. Storm of Mendota, Ill., was visiting in the City a few days ago. Charlie is ready for the spring opening.

W. E. Long of Tampico, Ill. was called to Chicago on account of the death of his wife's mother.

Chicago—W. J. Newman who has the contract for the excavation for the new Canal Street sewer opposite the Union Station recently unearthed with his 18-B Bucyrus shovel, a 2-foot section of wooden gas pipe that has been buried since 1850. It has been presented to the Chicago Historical Society.

Lockport and Vicinity.

By Geo. T. Dowse

It is reported that John G. Beck who until recently was the St. Catharines representative of the Canadian Equipment Company was seen in Lockport towards the last of February. It is reported that he has stopped reading the war news and is studying the Blue Book in order to find out how to get thin. He says that he has lost 40 pounds since commencing to do so.

The Great Lakes Dredge & Dock Company of Chicago have had a gang of men stripping their quarry No. 1 and commenced operations on March 15th. They have shipped one of their Bucyrus shovels and 20 dump cars to South Chicago where they have a large contract for a fill.

The Illinois Stone Company are pumping out their quarry which was flooded out during the recent heavy rains. They started operations about the middle of this month. They intended to run three fleets of boats with three boats to a fleet.

A. C. Upper is now working for the Illinous Improvement and Ballast Company at the Illinois Steel Company's coke plant, south of Lockport. Art says this job is good for all summer. Their Bucyrus shovel has been overhauled and is doing good work.

Indiana

Staunton—W. E. Galvin is operating a 35-B Bucyrus shove for the Oakridge Coal Company. This shovel is loading coal behind a 175-B Bucyrus shovel which is stripping the overburden. Mr. Galvin states that he has loaded a 50-ton car with a 35-B in less than 8 minutes and that in the month of February over 18,000 tons of coal were loaded with this machine from the pit.

Indianapolis—Bids were opened on March 15th by the Pennsylvania R. R. on a new line, officially known as the Indianapolis & Frankfort Railway, from Ben Davis, Ind. to Frankfort, Ind. This is the first big railroad job of the year and the largest. It calls for the construction of about 41 miles of line requiring 2,700,000 cubic yards of embankment, besides many bridges and masonry work. The cost will be about $3,500,000. It is reported that Dunn & McCarthy of Chicago got the work. H. T. Whitney, 430 Lemcke Building, Indianapolis is engineer in charge.

Iowa

Cedar Rapids—White & Duffy, Milwaukee, Wis., have been awarded contract for about 20,000 cubic yards of grading for construction of second track between Cedar Rapids and Beverly, for Chicago & Northwestern Railway.

Kansas]

Pittsburg and Vicinity.

By W. S. Russell

We are pleased to announce the fact that the spring time is here mild and balmy with clear blue skies and sunshine. The farmers are all busy at work putting in their crops, building operations have started the county roads are being dragged, moving vans are hauling household goods to other places of residence. The women are buying spring suits and Easter hats and everything is lovely.

The coal market is quiet with a general falling off of orders. Prices have declined in consequence and we now quote as follows: Lump per ton $2.25; Nut per ton $2.00; Mine run per ton $1.75; Mill run per ton $1.60; Slack per ton $1.35, f. o. b. railroad cars at the mines.

We note from trade journal reports on the coal trade in the middle western states that the warm spring weather has halted the buying of all grades of coal. The demand for steam coal for industrial use continues steady, but the depression caused by the change in the weather has induced many cancellations of orders, mainly on domestic sizes. The Indiana field holds out better than the other neighboring states but there is a car shortage there that is curtailing shipments about 25 per cent.

In the Ohio Valley, the industrial demand is holding up well and sales managers are looking forward to a rather active contract season at prices higher than a year ago.

The situation in the Kansas field is normal for this time of the year with a moderate demand causing a curtailment in production, particularly of the shaft mines. While the coal stripping steam shovels are nearly all working there are none of them on double shift as the necessity for this is over for the summer.

Ira Clemens, president of the Clemens Coal Company of Pittsburg, has been elected president of the Kansas Employer's Association recently formed at Topeka. The purpose of the organization is to bring about co-operation of Kansas employers in various matters that vitally concern them to their mutual benefit. It is anticipated there will be 8000 members of the organization for which plans are being made. Every part of the state and most all of the principal industries in the state were represented at the Topeka meeting last month.

The L. A. Wells Construction Company, 34 Wade Building, Cleveland, Ohio, have the contract to build that portion of the Fort Scott and Pittsburg electric line between Fort Scott and Mulberry, Kansas, 23 miles, where a connection will be had with the present electric car line at Mulberry to Pittsburg. The work is to be finished within a year and will be a great convenience to the traveling public.

Messrs. Higgins and McDonnell, railroad contractors of Fairbury, Nebraska, spent a day in Pittsburg last month, enroute from Texas. They have finished their work on the Canadian Northern Railroad in Manitoba and are looking for something new

G. M. Boyd and E. B. Stockton of the Boyd Coal Company of Warrensburg, Missouri, were at Pittsburg last month and bought the 95-ton Vulcan coal stripping steam shovel formerly operated by the Haynes Coal Company at Ardath, on the Kansas City Southern Railroad. They will have it repaired and move it to Warrensburg where they have a fine field of strip coal they have been working for the past two years.

The W. W. Patterson Coal Company have removed their 95-ton Vulcan steam shovel from the pit about a mile below Scammon and expect to install it on another field. The present one being worked out.

We understand that C. H. Markham formerly president of the C. H. Markham Coal Mining Company, has moved with his family to Kansas City where he will take up his permanent residence.

Stuart Crowe of Kansas City spent several days in Pittsburg last month.

H. J. Sternberg, vice-president of the Minden Coal Company, spent a few days at Pittsburg last month.

V. C. Robins, a mining engineer of Lehigh, Oklahoma, has moved to Joplin and stopped off at Pittsburg for a day recently to look over the coal stripping operations.

Joe Hazen, manager of the Chapmen Coal Company of Kansas City, was at Pittsburg for a week or two last month on business matters.

J. S. O'Flaherty, chief engineer of the Central Coal & Coke Company, was a visitor at Pittsburg for a day or two last month.

There are good opportunities for parties having means to engage in coal stripping in the Kansas field. Strip coal land can be bought or leased at reasonable prices and there is good many in the business. Further information will be furnished by addressing W. S. Russell, Stilwell Hotel, Pittsburg, Kansas.

The Bucyrus Company have a stock of repairs for their coal stripping steam shovels at the W. L. Sullivan Machinery Company store room which is a great convenience to operators of Bucyrus steam shovels.

The W. L. Sullivan Machinery Company are located on 7th Street near Broadway where they carry a stock of coal miners, mill, railroad and contractors, supplies. They are dealers in machinery, engines, boilers, pumps, motors, etc. for either steam, gasoline or electric. Also have repairs for Bucyrus steam shovels. Mr. Sullivan will give his personal attention to the wants of their customers.

Kentucky

Hickman—J. E. Hilton is superintendent for the Oglesby Construction Company of their levee work near here. This company is operating a Bucyrus 6-yard tower excavator. J. Gwin is operator.

Barbourville—The contract for grading eight miles of the Cumberland & Manchester Railroad, a branch of the L. & N. system, building from Barbourville to Manchester, Ky., has been awarded to T. J. Anderson, a Knoxville, Tenn., contractor. The work awarded to him extends from Cannon, 8 miles out of Barbourville, to beyond the Clay County line.

Louisiana

News from the South.

By The "Byrons", New Orleans

P. Nordstrom, who was in charge of the erection of the two Bucyrus ditching dredges at Baton Rouge, La. for the D. B. Gore Co., was a caller recently. Mr. Nordstrom reports the two dredge working satisfactorily and moving 200,000 cubic yards of material per month.

D. B. Gore of D. B. Gore Co., of Baton Rouge was a caller at this office recently and reports his work progressing well.

Motley & Dyer of Birmingham are doing the prospecting and engineering work at Russelville for the Alabma Fuel & Iron Co., There will be about two miles of railroad to be built to the new mines of the company.

Wm. Welch of South Milwaukee, Wis. was a visitor to New Orleans recently. Mr. Welch was obliged to go through an operation at the Touro Hospital while here.

Chas. Miller of the Memphis office of the Western Wheeled Scraper Co., dropped over to Birmingham recently and sold the Sloss Sheffield Steel & Iron Co., a string of cars for their ore operations at Russelville.

Mississippi levee work is entirely at a stand still owing to high water and some bad breaks have occured in the levee near Natches and many square miles of country is under water. Natives are fleeing for their lives. Loss of crops and live stock will be enormous.

The Sloss Sheffield Steel & Iron Co., of Birmingham are crowding their mines and furnaces to their maximum capacity, and are preparing to increase their output materially.

Jas. Steel, superintendent of the new iron ore operations of the Alabama Fuel & Iron Co., at Russellville, Ala. is making things look busy and preparing to install a very large outfit.

Operations in the brown ore districts in Alabama, Georgia and Tennessee are very active, and the demand for iron ore continues to increase.

Wilburn Hill of J. F. Morgan & Co., of Attalla reports that their road work in that vicinity is moving along nicely.

The Sugar Valley Land Co., of Sugar Valley Ga. are opening quite an extensive ore proposition and expect to have their machines in operation by March 1st. They have just constructed five miles of railroad into their mines.

Dragline work in the North must be picking up as the Doherty-Walsh Roller Co., of Baton Rouge, who are manufacturers of the noted Louisiana black gum rollers advise that they are shipping a large number of their rollers to northern contractors.

J. T. McCarty & Co., of Gainesville, Fla. met your correspondent in Birmingham the other day and stated he was looking for work. Mr. McCarty just completed his G. F. & A. Ry work in Alabama.

The Sugar Valley Land Co., of Sugar Valley Ga., have just purchased a class 14-B Bucyrus shovel for their brown ore mines near Gadsden, Ala. They are now operating a Vulcan Little Giant at that point.

D. B. Gore of Baton Rouge, La. have just taken a large contract for constructing canals near New Orleans. They will install a class-24 Bucyrus dragline on this work.

Minnesota

Notes from the Twin Cities.

By G. Norstrom

C. D. Smith, contractor, of Minot, N. D. called the other day and we enjoyed his visit very much. During the conversation he happened to mention that he has not in three years fired any of his men. His outfit consists of 16 teams and he has had the same 16 men for three years, although some of these men have been with him as long as seven years.

This is an unheard of condition and I have never met a contractor making a statement of this kind before. Mr. Smith's help consists of farmer's sons from Wisconsin, who, after drawing their full seasons' pay at the end of the season, go back home and return again promptly next year when called on.

Fredericks & Barnard of Minneapolis, have an order for a half million yard ditch contract in the vicinity of Fargo, which con tract has to be finished by December first. From what we hear, this is about as nice a piece of ditch work, as he has been let in the Northwest for several years. It will not do for them to put the draglines at this work and expect them to be finished before contract time.

Up to the present writing, no railroad work has been let in the Twin Cities but if the present conditions continue, we are in hopes of being able to report some big dealings in our next issue.

McCullough & Cheney of Minneapolis, who have taken about a 400,000 yard job from A. Guthrie & Company at Chippewa Falls, are already moving their outfit, and expect to begin moving dirt about the latter part of March. They intend to do the work with two 70-C shovels, Davenport dinkies, and four-yard cars. They expect to finish the work in about three months time. Arthur Cheney advised me that he expected to have another job by the time they finished this one. Here's hoping that not only McCullough & Cheney, but all other outfits, will have a good job by that time.

The writer on behalf or our firm attended the funeral of our beloved friend Pat Walsh of Davenport, on March 18th. Without doubt the funeral was the most beautiful and best conducted that I have ever witnessed, and the speech which Father O'Brien of the St. Mary's Catholic church made, was very characteristic of our friend.

Father O'Brien compared Mr. Walsh with such great men as Phil Sheridan and General McClellan, whom Mr. Walsh had always admired very much. We all agree with Father O'Brien that Mr. Wlash would have made a mark in any line of business he had chosen to enter. Besides these great business qualities of Mr. Walsh, he was of a very charitable disposition, and has in the past ten years given the St. Mary's Catholic church forty thousand dollars in cash besides relieved a lot of poverty, which acts Mr. Walsh always tried to conceal. The St. Mary's church was crowded to it's fullest capacity, and several hundred people were standing on the outside, who were unable to get in.

Construction of the Great Northern Line from New Rockford, N. D. to Lewiston, Mont., which ultimately will afford a direct connection from Lewistown, Mont., and the Twin Cities, is under way between Circle and Lambert, Mont.

The Circle to Lambert gap in the line practically completes the railroad from here to Lewistown, and leaves only the construction of the line from here to New Rockford to complete the entire cut-off.

Development of the Hazel Park yards of the Omaha railway as part of a plan to provide ample space for fifty years to come will begin shortly on 150 acres of land north of the present Hazel Park yards. The improvement will cost in the neighborhood of $1,000,000 and will give the Omaha the largest and most accessible clearing yard in St. Paul.

Work on the improvement will start as soon as the Minneapolis city council adopts ordinances preliminary to starting work in the Omaha's North Minneapolis yards. The dirt to be removed from the Hazel Park property will be used for filling in North;Minneapolis.

In the summer of 1914 the Hazel Park yards were completed with fourteen miles of tracks, but this space already is inadequate. Excavation work will contunue through the summer and new tracks will be constructed as required.

Bemidji—The General Construction Co., 304 Alworth Bldg., Duluth, has been awarded contract for 150 miles of drainage ditches in Baltrami County (Ditch No. 30) for approximately $231,000.

Missouri

Cape Girardeau—A class-175 electrically operated Bucyrus dragline excavator owned by the Floesch Construction Company recently made the highest output on record for a machine of this size. In 22 hours and 42 minutes actual working time including time lost for oiling, etc. this machine dug 5,300 cubic yards or an average of about 234 cubic yards an hour. The one hour and 18 minutes lost time was due to lack of power and not to any fault of the machine. The operators on this machine were Louis Augustine, W. J. Hawkins and C. Moss. Mr. Augustine advises advises us that they have made 5,000 cubic yards a number of times. This machine is equipped with a 125-foot boom and a 3½ cubic yard bucket.

Notes from the Little River Drainage District.

By J. S. Whitley

Wm. H. Everding ("Jonsie") and R. J. Burchardt, both of California fame, having been employed by Natomas Consolidated for several years in their reclamation projects on the Sacramento River, are now running a class-14 Bucyrus caterpillar dragline for Floesch Construction Company, or Cape Girardeau.

"Jonsie" reports the caterpillar as running on regular schedule, meeting all trains and incidentally handling lots of dirt in the levee base stripping. He suggests that the superintendent, Mr. Dodds, allow them to bring it into the Cape over Sunday to wash boiler and help dispose of some of the surplus yardage around the St. Charles and the Terminal.

It is reported that another class-14 Bucyrus will arrive in a few days which will be placed on this work by the Floesch Construction Company. This increases the number of Bucyrus draglines on this contract to seven.

Louis Augustine, W. J. Hawkins and Charlie Moss are running No. 789 class 175-B Bucyrus electric dragline. This machine has 125-foot boom and 3½-yard bucket and is averaging between 4000 and 5000 yards per day and it recently made a record run of 5300 yards in a 24-hour day.

Tom Poole, Andy Storm and Long are running the class-24 steam machine, building the North Levee. This machine has encountered great difficulties, such as high water, bad tracking, wet material for the levee (causing it to slip) also some boiler troubles from bad water. Most of these will be eliminated as this spring weather is drying things out and we expect great things from it from now on.

Hugh Glenn, Axtel Pierson and Davis are running No. 790 class 175-B electric dragline. This machine has a 100-foot boom and a 4½-yard bucket. It is used in finishing the South ditch and levee. They are making rapid progress and handling big yardage.

Mr. John Page of the Page Engineering Company, Chicago, was in Cape Girardeau this week looking over one of his new machines that was sold to Barstow & Millard of Peoria, Ill. This machine is working on a sub-contract known as the Ramsey Creek Diversion Channel.

John McCoy, our genial superintendent at White Water, Mo., is just back from a two-weeks visit to his home in Sabula, Iowa. We are all glad to see him back on the job.

Tibbs suggests that;

If Miss Dolly Castings were to run a "Ferro" (latin for iron) game, would the Page buck-et?

No, but Lidger—wood.

Quick! "Casey", with the chloroform: He is suffering terribly.

(We have suggested to Mr. Tibbs to caution his friend "Lidger" not to go too fast, for when he comes to buck-et, he may find that Miss Dolly has a man in that Ferro game. We are told on good authority that she is the one that put the man in manganese, and that's a dangerous kind of lip to get, especially when there's a lady in the case.—Editor).

We have been having fine weather at White Water and low water in the creeks and both the class-24 electrics have responded to the efforts of all the six operators to make this a record month in yardage handled. A 24-hour run showed up 4800 cubic yards for No. 801 and 5000 yards for No. 802. The former has completed its work on straightening and cleaning our Crooked Creek and is now making great headway on the new channel for Castor River. The latter has about ten days work yet on Crooked Creek Channel and they will follow up No. 801. The new channel for Castor River is about 12½ miles of heavy cutting and an 18 to 20-foot levee on south side.

Fred Longhofer who worked formerly for A. T. Kern of Indianapolis, is now running the afternoon shift on No. 802, at White Water.

St. Louis Item.

By A. B. Koenig

A. L. Cook of Ottawa, Kansas has a lot of work putting in drain tiles in cuts on the M. K. & T. R. R. to sublet.

J. J. McCaughey Co. of Chicago were awarded the contract for building a double-track new line for the Burlington, near Curzons, Mo. There is between 100,000 and 125,000 yards of team work in this job.

A. A. Luck, 524 Rialto Building, Kansas City, Mo. has a cracker-jack dragline, also a good team outfit idle that he can place on work at once.

Capt. A. W. Farney was awarded 300 feet of revetment work at Sugat Creek, Mo. by the Standard Oil Co.

A. E. Guilford expects to start on the big reservoir job at Cambridge, Ohio in a couple of weeks.

M. C. Conners of Chicago was awarded the contract for grading passing tracks for the Burlington, between Smithboro and Keyesport, Ill. Also from Centralia to Woodlawn, Ill.

M. L. Windham was awarded the contract by the Burlington for grading passing tracks between Sesser and Ziegler Jct., Ill.

John Marsch passed through St. Louis the other day on his way south the other day to rest up. Expects to return in a couple of weeks.

G. R. Dowd will finish his work on the M. K. & T. R. R. at Prior, Okla. in a few days. Is in the market for some grading that will suit his six team outfit.

J. A. Ware Construction Co. of St. Louis are doing a lot of steam-shovel force account work on the Wabash R. R. near South Liberty, Mo.

Jas. Dunn and Pat McCarthy of Chicago got a great steam-shovel job when they bought the Cleveland American Base Ball Team. We hope estimates in this new undertaking will show up well during this year.

Jim Cameron of Cameron, Joyce & Co. passed through St. Louis the other day with his wife on the way south. Will return to their home in Keokuk, Ia. early in April.

The Vandalia R. R. Co. opened bids here last week for a new cut-off to be build between Ben Davis and Frankfort, Ind. via Lebanon, Ind. There is approximately 2,750,000 yards of embankment, 225,000 yards of excavation, 60,000 yards of reinforced concrete divided among 47 different structures, 42 miles of track laying and ballasting. Also 3000 to 4000 foundation piles to drive. This is the biggest job that bids have been asked for in this part of the country for sometime. Up to the present writing the work has not been awarded. Several bids being pretty close, but will announce the name of the successful bidder as soon as work is let.

Harrington Bros. are finishing their grading contract in the Western part of the city and are in the market for some more team work. No team job too big for their outfit.

Burke Bros Construction Co. of Ft. Smith, Ark. secured the contract for grading and bridges on the new Cotter Rush & Mineral Belt R. R. in Northwestern Arkansas.

J. M. Floesch, president of the Floesch Construction Co., Inc. of Rochester, N. Y. and Cape Girardeau was a caller this week. He reports that Manager S. T. Neely has all of the big electric draglines on the Little River Drainage job going full blast and prospects look good as their worst trouble are over. The Floesch Co. have the right man in Neely who will "deliver the goods" if any one can.

White Water—John McCoy, superintendent for the Floesch Construction Company here, has been enjoying a short vacation at his home in Tabor, Iowa. J. S. Whitley formerly of D. B. Hearin & Son of St. Patricks, La. who is widely and favorable known among dragline men, besides being justly famous as the contributor to the Excavating Engineer from this District, was in full charge while Mr. McCoy was away. Mr. Whitely we are told, has subbed the big dirt moving job at the Cape, which was mentioned in our February number. He will start operations in the near future and all the boys intend to work for him.

Cape Girardeau—Wm. H. Everding has been transferred from the Floesch Construction Company's class-24 steam dragline to the caterpillar dragline, and has been running this machine for about a month. He tells us that the two big 175-B's will have moved nearly 100,000 yards during March, making from 4,000 to 5,000 cubic yards a day for the last few weeks. The caterpillar machine is also making fine headway. They have been at work on a core trench and have been making headway at the rate of three miles a month, handling 2500 cubic yards a day. He tells us that we should keep a lookout for him in Milwaukee, as he expects to dig his way up here pretty soon. Mr. Everding states that "The Bunch" wants him to take the caterpillar into town on Saturday nights, but he dislikes to do so without washing her boiler first. Tom Poole says that the best place to wash it is in front of the Terminal, as it would help move the dirt which Mr. Whitely tells us has been collected there by the Floesch Construction Company bunch. We are told that when the above mentioned crowd, together with the skimmers from White Water and Rock Levee, congregate and get talking about steam shovels and draglines, it is enough to stop the clock.

DeWitt—The Bridgeton Construction Company of 308 Houser Building, are working a 70-ton Bucyrus shovel on the Western Division of the Wabash Railroad near here. They are using in conjunction with this shovel, 37 six-yard Western cars and 3 locomotives.

Doniphan—Contracts for work for Drainage Ditch No. 3, were let to the following: Main Ditch requiring 337,000 cubic yards of excavation to Willis & Reed, Essex, Mo., at $0.0584; laterals requiring 62,184 cubic yards of excavation to Stanley Dees, Hamill, at $0.077. Contract for 4 steel bridges was let to the Vincennes Bridge Co., Vincennes, Ind., at $3,245.

Montana

St. Ignatius—Bids we rereceived on March 23, at office of U. S. Reclamation Service for construction of canals and structures on the Flathead project. Work includes 20,000 cubic yards ex-

cavation, 230 cubic yards reinforced concrete, 500 square years paving, laying 3000 feet of vitrified pipe, and placing 49,000 pounds structural and reinforcing steel.

Bids were received on March 29, at office of U. S. Reclamination Service, for construction of canals and structures on Flathead project. Work includes 35000 cubic yards excavation, 250 cubic yards reinforced concrete, 900 square yards paving, laying 1300 feet vitrified pipe, erecting 16,000 feet B. M. lumber, and placing 31,000 pounds structural and reinforcing steel. Work is from two to eight miles southeast of Arlee, on the Northern Pacific railroad.

New Jersey

Atlantic City—Contract for constructing the Absecon-Atlantic City boulevard has been awarded to Hill Dredging Company at $280,321.05. Will be 4.91 miles long and 40 feet wide. Will include 106,545 square yards gravel surface, 247,-236 cubic yards embankment, 8 creosoted pile bridges, 1 bridge with girders incased in concrete and 1 bascule bridge with creosoted pile approaches.

New York

New York and Vicinity.

By H. Grey

C. S. Brown, of Mechanicsville, New York, one of the most experienced steam shovel engineers in the country, has recently taken a job to run the Modern Coal Mining Company's 225-B Bucyrus shovel at Parlette, Ohio, which position he obtained through advertising in the Excavaitng Engineer.

Holbrook, Cabot & Rollins Corporation, 52 Vanderbilt Avenue, New York City, have been awarded the contract for the sub-structure and foundation on the Thames River Bridge, New London, Connecticut.

It is interesting to note that the big jobs are commencing to be let.

The contractors are rushing equipment on to the work at the present time.

The F. H. Chapman Contracting Co., 111 Broadway New York City are at present doing the excavating for a large garage for the Wanamaker Department Stores, running from Broadway through to Lafayette Street. The excavating amounts to about 20,000 cubic yards. They are pushing work through to a rapid completion with an 18-B Bucyrus shovel.

This company is also excavating for the foundation of the Mt. Sinai Hospital at 99th Street and 5th Avenue, New York City with an 18-B Bucyrus shovel.

In our last issue we reported in error, that Ray Ilg had performed the remarkable feat of bringing through 27 cars of dredging machinery from South Milwaukee to New York in record time, despite the congested freight conditions. In making this statement we failed to give due credit to Mike Devitt, who was responsible for the prompt forwarding of twenty-five of these cars.

Ohio

Columbus and Vicinity.

By O. W. L. Coffin

Louis Jones is operating a class-7 Bucyrus dragline on Sandusky River improvement work at Tiffin. This machine is operated by E. C. McElvaney and fired by Frank Dean, both from Chicago. Mr. McElvaney states that the county engineer told him that he was moving 400 yards a day. The digging is particularly hard, as there are six inches or more frost in the ground and they are obliged to handle cut stone blocks used as the face of the wall. The 18-B Bucyrus on the same piece of work is operated by N. V. Fetzer and fired by J. C. Fetzer. Both worked for Robert Grace on the Norfolk & Western in Virginia last year.

Toledo—R. J. Doyle is operating a 90-ton Vulcan shovel near here.

Adena—Chas. Flynn has recently completed the erection and test of the Adena Coal Company's 35-B Bucyrus shovel. The shovel was mounted on caterpillars which eventually will work in conjunction with the 225-B Bucyrus revolving shovel which has not as yet been delivered.

Bay Bridge—J. W. Shafer recently completed the erection and test of a 14-B Bucyrus revolving shovel for the Sandusky Portland Cement Company, here.

Toledo—Contract has been awarded Henry Vanderveen, Grand Rapids, Mich., for constructing the Toledo-Monroe-Detroit highway, at $173,500.

Oregon

Notes from the Northwest.

By L. T. Russell, Portland

A number of logging roads are starting up and some of them are being extended which makes work for shovel operators. Eugene Pruner, McDowell and a number of others are out at this time.

E. J. Fader advises that he hopes to start work sometime during the present year on the construction of the Spokane, Bellingham and Eastern R. R.

Surveys are being carried on in eastern Oregon, for R. E. Strathorn, on the proposed Oregon, California & Eastern R. R.

The placer dredge of the Empire Gold Dredging & Mining Company, is nearly completed and power for operating will soon be available from the Prairie City plant. The dredge will be worked between John Day and Canyon City in Canyon Creek Gulch, which was very rich when worked in early days.

P. G. Dunn & Company of Spokane, Washington, have landed a contract on street improvement in Seattle and will start work as soon as the weather settles.

Business conditions are improving somewhat in the Northwest. The best thing about it, from the contractor's point of view being an upward trend of prices on earth and rock excavation.

Berry & Houston, of Portland, Oregon, recently purchased a second-hand Bucyrus 18-B revolving shovel from Mr. Ffolliett, of Everett, Washington to use in stripping a stone quarry at Tillamook, Oregon.

Pennsylvania

Mainville—D. E. Gillmore has recently accepted a job with Kehoe & Company at their coal stripping near here. He is operating a Bucyrus 70-C shovel.

Wilkes-Barre—A letter from Edward George received the early part of March advises that there is nothing stirring around this vicinity just yet.

Timothy Burke has one shovel working on a stripping job at Plains, Pa.

Porter Bros. have their outfit idle as has Ed. Whalen.

The Delaware & Hudson Railroad has two shovels working, one loading stock coal and one on a small stripping job.

Lansford—George Stanbery has about completed the test of a new 70-C Bucyrus shovel for the W. H. Loomis Contracting Company here.

Pottstown—Frank Wilkinson is erecting and testing a 70-C Bucyrus shovel for the Pittsburgh Construction Company, here.

Altoona—Contract for constructing 12 miles railroad for Cambria & Indiana Railroad Company hax been awarded to A. L. Anderson & Bros., Altoona, Pa.

Harrisburg—Contract for grading and masonry work for new track of Philadelphia & Reading Railroad, from Rutherford yards to Harrisburg, about 7 miles, has been awarded to James McGraw Company, Commercial Trust Building, Philadelphia.

Tennessee

Elkmont—T. E. Smith is operating a Marion "28" which he recently erected for the Elkmont Construction & Supply Company near Elkmont, Tenn. Mr. Smith tells us that he looks forward to every issue of the Excavating Engineer more than he does to his home-town paper. He states "it covers the Sunny South like the morning dew".

Jamestown—Contract for grading 33½ miles road has been awarded to Solamon Contracting & Engineering Company, Harriman, Tenn., at $58,995.85. This will require 134,750 cubic yards grading.

Wisconsin

Green Bay—E. T. King has installed the machinery on a 4-yard Bucyrus dipper dredge for the Hartman-Greiling Company here.

Wyoming

News from the North Platte Project.

Everything is progressing serenely on the North Platte Project. MacArthur Bros. Company landed the new contract which has been causing so much interest.

Mr. and Mrs. W. O. Winston of Minneapolis, visited Ft. Laramie early in March.

Mrs. Thomas Sheridan is spending the month at her home in Seattle, Washington.

The class-20 Bucyrus dragline started digging during this month. Frank A. Mengel is operating it at the present time.

Winston Bros. expect to complete their work between May 1st and 20th. They are still hauling coal daily, but by the time this issue is in the hands of our readers they will have finished this.

PROSPECTIVE CONSTRUCTION

Arkansas

Bids for constructing 13 miles of asphalt roads, gravel base, and 3 miles gravel roads, will be received by John R. Turney, secretary County Road District No. 1 until April 6th. This will require 67,000 cubic yards excavation.

St. Louis, Iron Mountain & So. plans expenditure of $2,000,000 for improving line in Arkansas during 1916.

Arkansas Northwestern Railroad Co. plans to improve and extend line this year. S. A. Sutherland, Bentonville is secretary and assistant treasurer.

Alabama

Birmingham Motor & Country Club proposes construction of large automobile speedway. Solon Jacob, Birmingham, is president and general manager in charge of construction.

Plans are under consideration for construction of a highway between Mobile and Baldwin County, across to the delta. Highway will have a length of 7½ miles with a 35-foot wide crown and 2 to 1 slope. The road will be formed by dredging channel parallel to roadway. Improvement will require about 400,000 cubic yard of embankment, 3 200-ft. span bridges and 1 100-ft. drawbridge, also creosoted pile trestle bridges. Estimated cost, $115,000. Harry L. Fisher, is county highway engineer.

Bids for constructing about 16 miles sand clay roads will be received by J. J. Robinson, Jr., judge of probate, Lafayette until April 24th.

Arizona

Surveys are reported to be under way for a new railroad to handle ore from Mineral Hill, Paymaster and other mining properties southwest of Tuscon. The line will be constructed to connect with the Nogales branch of the Southern Pacific.

It is being contemplated by Navajo Southern Railroad Company, W. H. Clark, secretary, Holbrook, to construct road through Sitgreaves national forest via Snowflake, Ariz., to Fort Apache, about 140 miles.

California

The Hueneme, Malibu & Southern Railway has applied to the State Railroad Commission for permission to take over Hueneme, Malibu & Southern Railway and complete the road from Hueneme along the coast to Port Los Angeles. Rindge Co., Trust & Savings Building, Los Angeles is interested.

County Highway Commission, Santa, Ana., is preparing reports on two different plans for highway improvement. One is for a bond issue of $350,000, $140,000 for coast highway, $50,000 for completion of pavement in Santa Ana canyon, and the remainder on various roads. The other plan is for a bond issue of $800,000, $240,000 of which is to be for the coast highway.

Election has been called for June 13th in Mt. Diablo Boulevard district to vote on bond issue for construction of highway from the tunnel through Moraga Valley and Alamo to Mt. Diablo Park.

Florida

Bids will be received until April 18, according to report, by County Commissioners, Bartow, for 240 miles of highway to be constructed with brick, asphalt or asphaltic concrete. H. S. Jaudon Engineering Co., Engineers, Box 384, Bartow, Fla.

D. L. Skipper, commissioner, Zolfo, Fla., will furnish further information regarding 35 miles of road to be constructed between Sebring and Bassenger.

Foreign

The general engineering office of Valparaiso, Chile, has presented to the government a project for the construction of a single-track railway from Valparaiso to Santiago via Casablanca, with the request that the government grant permission for the construction of this line, and undertake to guarantee the cost of construction.

Georgia

It is being planned by the Augusta & Northern Railway Company, James U. Jackson, Augusta, is interested, to construct line from Augusta, Ga., to North, S. C., distance about 60 miles.

State Railroad Commission has granted permission to the Southern Railway to relocate its tracks from Cornelia to the South Carolina line, in order to take our curves and grades and proceed with its plans to double track the system from Atlanta to Charlotte. It is probable the Southern Railway will let contracts soon for double tracking.

Idaho

The Oregon Short Line R. R. plans to extend its line from Godwin on Rogerson Branch, 8 miles southeast of Twin Falls to Castleford, 25 miles. Carl Stradley, Salt Lake City, Utah, chief engineer.

It is being planned by the Oregon Short Line Railroad, Charles Stradley, chief engineer, Salt Lake City, Utah, to construct an extension from Godwin on the Rogerson branch, 8 miles southeast of Twin Falls, to Castleford, distance 25 miles, this year.

Illinois

Chicago, Burlington & Quincy Railroad Co. will build a line from Smithboro to Keyesport, 11.42 miles, and from Centralia to Woodlawn, 12 miles, by company forces. T. E. Calvert, Chicago, is chief engineer.

It is probable that about 75 miles state highway will be constructed this year in northwestern Illinois. H. E. Surman, Peoples State Bank building, Moline, is division engineer.

Indiana

Plans and specifications are being prepared by B. F. Deardorff, city engineer, Muncie, for concrete wall and levee to be constructed by Muncie along White River.

It is probable that about 40 miles highways will be constructed this year in this district at a cost of about $350.000. Albert A. Reith, county engineer, Goshen.

Kentucky

Hunter McDonald of Nashville, Tenn., chief engineer of the Nashville, Chatanooga & St. Louis Railroad Co., has announced that the N. C. & St. L. will raise its levee on the Mississippi river at Hickman, Ky., recently damaged by floods to the same height as the government levee. The Illinois Central, which has had its engineering corps inspecting the damage done to its levee at Hickman, will be asked by the N. C. & St. L. to join in the improvement, it is said.

Maine

It is being contemplated by the Canadian Pacific Railway Company, J. M. R. Fairbairn, assistant chief engineer, Montreal, Que., to double-track the section of line passing through the State of Maine.

Maryland

The Baltimore & Southern Railway Company plans completion of line from Glenburnie to Drum Point, Md., about 75 miles, which amounts to about $1,000,000. W. L. Wheeler, 212 5th avenue, New York City, is interested Will not be let by sealed bids, but all contractors will receive consideration.

It is being contemplated by the Western Maryland Railway Co., H. R. Pratt, Baltimore, Md., chief engineer, to construct second track from Williamsport to Big Pool; distance 12 miles.

Michigan

Detroit, Bay City & Western Ry. proposes to extend its main line from Peck to Port Huron. It is understood the road will be in operation before the end of 1917.

Mississippi

Sommill Lumber Co. of Pelahatchee has closed a deal for a large tract of timber land in the Pearl River section and has begun work on the main line of railroad. This company at present has 21 miles of line in use and when the new work is completed will have about 60 miles. The proposed betterments on present main line require the handling of about 50,000 cubic yards of excavation.

Nebraska

Bids will be received until noon, April 11, by Louis Stutt County Clerk, Nebraska City for 100,000 cubic yards, more or less, of cutting hills in Otoe County.

Railroads entering Omaha are reported to be working on plans for a new Union Depot to cost about $2,000,000.

North Carolina

Construction may be started early this month on the Shelby-Caser R. R. recently incorporated. Final surveys are now being made by William Chanse, engineer, Spartanburg, S. C. W. A. Cullen, representing the Vandergrift Co., New York City, which will build the road, has opened offices in the Miller Block, Shelby.

New York

New York Central & Hudson River R. R. is contemplating construction of 16 miles of double track this year, on its St. Lawrence Division.

New York Central & Hudson River R. R. has surveys under way for elimination of the Storm King mountain tunnel, 4 miles south of Beacon, on the Hudson Division. The railway also proposes the erection of a causeway on the river side of the Breakneck cliffs, near Beacon.

North Dakota

Duluth, Huron & Southern R. R. has filed its articles of incorporation. The Company proposes a line from Duluth to Wahpeton, thence to Huron, tapping the Milwaukee main line near the boundry of Dakota,. R. W. Henderson, St. Paul, Minn., is president. G. W. Morrow, Wahpeton, is vice-president.

It is being planned by the Northern Pacific Railway, W. L. Darling, chief engineer, St. Paul, Minn., to extend line from Mott, 40 or 50 miles.

Oklahoma

Surveys are completed for 40 miles of the proposed 125 miles railroad for La Kemp & Northwestern Railway Co. G. C. Warlick, La Kemp, is general manager.

Oregon

Sumpter Valley Ry., E. B. Pengra, Baker, general manager, is reported planning to begin construction this spring on 50 miles of railroad south from Dixie Summit.

Some time late this summer work will probably be started on Oregon & Eastern Railroad, proposing line to connect Bend with Lakeview and Klamath Falls. Robert Strahorn, Portland, Ore., is promotor.

Texas

Bids will be received until April 12th, by City Clerk, Port Arthur, for the construction of about 200,000 cubic yards of levees, about 150,000 cubic yards of canal and ditch excavation, and about 150,000 ft. B. M. of creosoted pine culverts and bridges. J. F. Coleman, consulting engineer, 920 Hibernia Building, New Orleans, La.

Utah

The Denver & Rio Grande R. R. plans railways in Uinta Basin in eastern Utah. J. G. Gwyn, Denver, Colo., is chief engineer.

Washington

It is intended by the Northern Pacific Railroad Co., W. L. Darling, chief engineer, St. Paul, Minn., to construct about 19 miles new track this summer. Sunnyside branch to be extended 7 miles, Simcoe branch extended 10½ miles and Cowiche Valley branch 1½ miles.

Lamb Timber Co., Hoquiam, will construct six miles of logging railroad.

West Virginia

It is reported that the Morgantown & Wheeling Ry. Co. will be purchased by Pittsburgh capitalists who propose to complete the line through to Wheeling. Surveys and location for the projected 50-mile extension already have been made.

It is being planned by the New York Central Lines, G. W. Kittredge, New York City, chief engineer, to construct railway from Wheeling, W. Va., to Dillonvale, Ohio; distance, 20 miles.

Wisconsin

It is being planned by the Soo Railway, C. N. Kalk, chief engineer, Minneapolis, to construct a line from Reserve to Mellen, Wis., about 45 miles.

The Chicago, St. Paul & Minneapolis & Omaha Railway Company, H. Rettinghouse, chief engineer, St. Paul, Minn., will let contract soon for constructing a line from Norma to Jim Falls, distance 6 miles.

(*Continued from Page 298*)

unpretentious way, digging cellars and sewers and doing street work generally. Gradually his business grew until, finally he became the head of the Walsh Construction Company, one of the largest railroad construction companies in the country. At the time of the building of the Panama Canal, he was one of the few who was invited to bid upon this work. So many were the recommendations that flowed in to President Roosevelt from men in all walks of life in all parts of the country, that when it was decided that the government should do the work itself, Mr. Roosevelt bound these tributes and sent them to Mr. Walsh with the following statement:

"Any man living might be justly proud of this evidence of integrity."

Mr. Walsh was famed far and wide for the generous treatment of his employees and for his ease of approach. Time and time again he promoted shovel runners and foremen to superintendents and co-partners and in order to encourage them, organized numerous subsidiary companies. Shortly before his death these companies were merged into one big company and were taken over by the Walsh Construction Company. These were the Kahl Construction Company, the Walsh-Kahl Construction Company, Walsh-Hogan Construction Company, McGrath Construction Company, the T. J. Walsh Construction Company and the Walco Construction Company.

TRADE NOTES

The Hayden-Corbett Chain Company report business in steam shovel chain very active. During the last ten days they received orders for a car load of Old Reliable XX Dredge Quality hoisting chain, from three different customers. In one day they received orders for 22 sheam shovel hoisting chains. They are suggesting to all their customers, to anticipate their wants as much as possible in order to avoid disappointment in regrd to delivery.

The Railway Supply Company, S. A. of the City of Mexico, formerly representatives of the Bucyrus Company, the Baldwin Locomotive Works and others, have been obliged, because of existing conditions, to close up its affairs. Mr. Carl Holt Smith, president of this company, will in the future represnt throughout Mexico, the two above mentioned concerns with the addition of the Standard Steel Works Company and several other companys. Mr. Smith writes that he is in hopes that conditions will improve in Mexico during the next few months. The financial situation however, is a disturbing feature, the exchange being about 27 pesos, Mexican money for $1.00 in gold.

The T. L. Smith Company of Milwaukee, Wisconsin, has recently finished the construction of the two largest concrete mixers which have ever been built. These two machines are designed to hold 108 cubic yards of mixed concrete per batch, or approximately 160 cubic feet of loose material per batch. They are being constructed for the Hardaway Construction Company of Washington, D. C. and are to be used in constructing a large dam which this company is building for the U. S. Aluminum Company of Whitney, N. C. An idea of the tremendous size of these machines may be gained from a knowledge of the fact that they are twice the size of any concrete mixer which was used on the Panama Canal. We publish a view of one of these herewith.

The Troy Wagon Works Company of Troy, Miami County, Ohio, report the following recent sales of their trailers:—Compania Minera De Penoles, New York City, 1 No. 512 5-ton Non-Reversible; City of St. Paul, St. Paul Minneapolis, 1 No. 110 1½-ton Reversible; The Flint Coal Company, Flint, Mich., 1 No. 110 1½-ton Reversible; The Grant Iron Works, Detroit, Mich., 2 No. 212 2½-ton Reversibles; Milwaukee Gas Light Co., Milwaukee, Wis., 1 No. 512 5-ton Reversible; Mitchel Dairy Company, Bridgeport, Conn., 2 No. 110 1½-ton Reversible; United Cigar Stores Co., New York, N. Y., 1 No. 212 2½-ton Reversible; Waites Motor Vans & Storage Co., New York City, 1 No. 110 1½-ton Reversible; Seymour Mfg. Company, Seymour, Conn., 3 No. 212 2½-ton Reversibles; U. S. Engineers Corps, Washington Barracks, 1 No. 110 1½-ton Reversible; Otis Cement Construction Co., Detroit, Mich., 1 No. 512 5-ton Reversible

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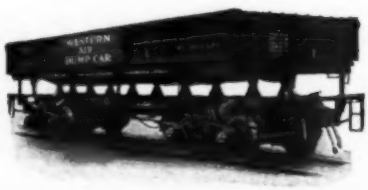

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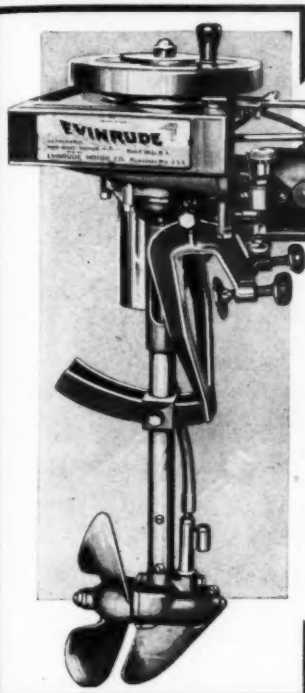

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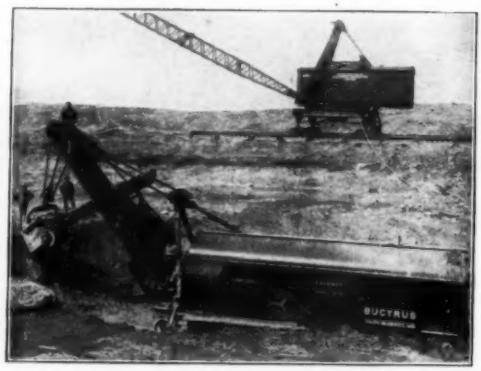
The Digging of the Calumet-Sag Channel



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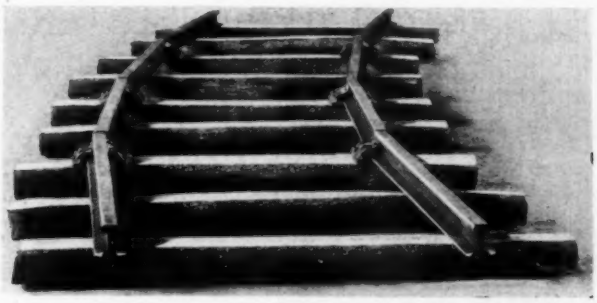

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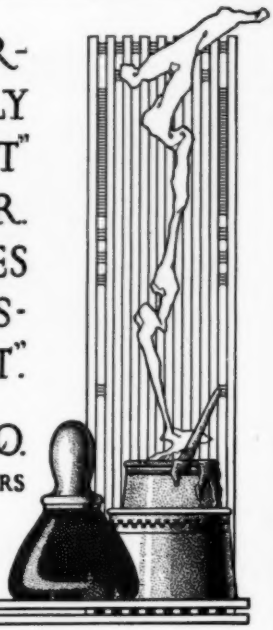

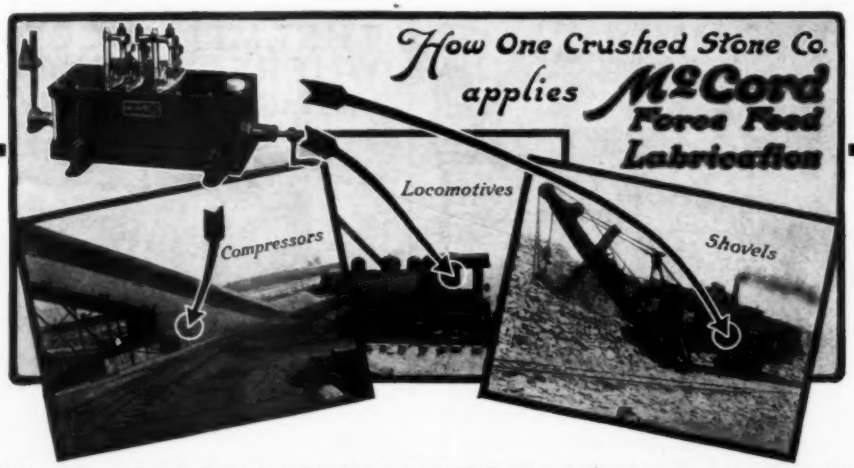

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The Excavating Engineer

Volume 12 MAY, 1916 Number 8

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